

QUARTERLY REPORT
CONSOLIDATED WATER TREATMENT FACILITY
AND
OU7 PASSIVE SEEP INTERCEPTION AND
TREATMENT SYSTEM

FOR OCTOBER THROUGH DECEMBER 1998
INCLUDING DATA SUMMARY FOR
JULY THROUGH SEPTEMBER 1998

Rocky Mountain Remediation Services, L.L.C.

JANUARY 1999

TABLE OF CONTENTS

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY

1.0 INTRODUCTION	1
2.0 CWTF OPERATIONS.....	2
2.1 QUANTITIES OF WATER COLLECTED AND TREATED.....	2
2.2 CHEMICAL USAGE	4
2.3 WASTE GENERATION	4
3.0 INFLUENT AND EFFLUENT SAMPLING	7
3.1 OU1 FRENCH DRAIN SUMP, COLLECTION WELL AND BUILDING 881 FOOTING DRAIN CHARACTERISTICS.....	7
3.2 OU2 SURFACE WATER CHARACTERISTICS	7
3.3 TREATED EFFLUENT CHARACTERISTICS	7
4.0 ENVIRONMENTAL COMPLIANCE	7
4.1 PERIODS OF NON-COLLECTION	8
4.2 AIR MONITORING	8
5.0 ANTICIPATED OPERATIONS FOR NEXT QUARTER	8

SECTION B - OU7 PASSIVE SEEP INTERCEPTION AND TREATMENT SYSTEM

6.0 INTRODUCTION, OPERATIONS, AND SAMPLING.....	10
---	----

TABLES

2-1 APPROXIMATE QUANTITIES OF WATER COLLECTED AND PROCESSED	3
2-2 CHEMICAL USAGE	5
2-3 WASTE GENERATION	6

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

1.0 INTRODUCTION

The CWTF went on-line February 29, 1996. The CWTF was designed as a comprehensive facility which combined individual IM/IRA treatment activities in order to reduce cost, increase efficiency, and offer treatment options to the Rocky Flats Environmental Technology Site (RFETS) in support of on-going Environmental Restoration (ER) activities and remediation.

The Consolidated Water Treatment Facility (CWTF) consists of the following specific unit operations:

- Chemical precipitation (T-900A/T-900B);
- Cross-flow membrane microfiltration (T-900A/T-900B);
- Ultraviolet Light/Hydrogen Peroxide Oxidation (Building 891);
- Granular Activated Carbon (Building 891); and
- Ion Exchange (Building 891).

A clay absorbent media drum is available for a pretreatment of oily wastewaters during water transfers from tanker trucks to influent storage tanks. Waters are processed through the various CWTF unit treatment operations based on knowledge of the influent water characteristics in order to maximize treatment and reduce handling costs and waste generation.

The CWTF currently treats contaminated water from the following sources:

- Operable Unit 1 (OU1) groundwater
- Decontamination water from the Main Decontamination Facility (MDF) and Protected Area Decontamination Facility (PADF)
- Other ER waters (e.g., purge water, water pumped from containments, etc.)

The CWTF flowpath is flexible enough to allow waters to be treated through particular unit processes as necessary and to allow for re-treatment if necessary.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

2.0 CWTF OPERATIONS (October through December 1998)

2.1 QUANTITIES OF WATER COLLECTED AND TREATED

Table 2-1 summarizes the quantities of water treated at the CWTF for the period October through December 1998. During this period the CWTF accepted water from the following sources:

- OUI French Drain Sump
- OUI Collection Well
- Snow melt/rain water pumped from CWTF containments
- MDF and PADF Water
- 903 Pad Decontamination Activities
- B881 Roof leak
- B371 Excavation
- Steam Vault
- Groundwater Monitoring Well Purge
- Trench 1

Table 2-1 shows that a total of approximately 47,500 gallons of water were treated through the Building 891 Ion Exchange Columns from October 1, 1998 through December 31, 1998. Approximately 52,950 gallons of the total water volume were treated through the chemical precipitation/microfiltration trailers. Some inconsistencies were detected in last quarter's report. The table has been modified to more accurately convey the information presented.

Please note that because the CWTF is equipped with three influent tanks, the amount of water treated may be less than or greater than the amount of water collected for any given period.

There was no treated water released to the South Interceptor Ditch (SID) during the period from October through December 1998,

As of December 31, 1998, the total water processed through the Ion Exchange Columns is approximately 4,705,529 gallons.

TABLE 2-1
CONSOLIDATED WATER TREATMENT FACILITY
APPROXIMATE QUANTITIES OF WATER COLLECTED AND PROCESSED a/

Month/Year	Gallons Collected from French Drain Sump b/	Gallons Collected from the OU1 Collection Well b/	Gallons Accepted at Bldg 891 from the MDF and Other Sources c/	Gallons Pumped from Bldg. 891 Containments	Gallons Collected from the OU2 SW-59	Gallons Processed through T900A/T900B	Gallons Processed through GAC at Bldg 891	Gallons Processed through IX at Bldg 891
Jan-98	21,105	1,860	3,754	1,446	2,367	24,531	0	20,780
Feb-98	20,475	1,270	0	511	0	23,720	12,200	31,766
Mar-98	31,913	1,530	0	10,811	2,380	45,957	44,636	42,624
1st Quarter Totals	73,493	4,660	3,754	12,768	4,747	94,208	56,836	95,170
Apr-98	95,014	1,120	6,450	18,931	0	37,440	124,799	123,287
May-98	32,114	1,680	4,753	8,738	2,435	60,791	54,097	51,477
Jun-98	4,335	1,680	6,301	3,020	880	15,090	20,982	20,231
2nd Quarter Totals	131,483	4,480	17,504	30,689	3,315	113,321	199,878	194,995
Jul-98	6,850	1,995	336	3,655	0	12,595	11,865	10,434
Aug-98	16,465	1,465	11,481	3,255	0	42,865	40,168	39,906
Sep-98	660	390	9,808	1,750	0	76928*	76928*	76928*
3rd Quarter Totals	23,975	3,850	21,625	8,660	0	55,460	52,033	50,340
Oct-98	4,200	795	5,352	2,170	0	26,870	43,765**	42,022***
Nov-98	5,580	140	780	6,575	0	11,012	29,653**	31,708***
Dec-98	5,440	960	5,550	2,480	0	15,072	13,398	12,799
4th Quarter Totals	15,220	1,895	11,682	11,225	0	52,954	48,705	47,529
Year-to-Date Totals	244,151	14,885	54,565	63,342	8,062	315,943	357,452	388,034

a/ Please note that because the CWTF is equipped with influent tanks, the quantity of water collected will not necessarily equate to the quantity of water processed.

Also note that a 15,000 gallon surge tank (T-203) is in-line between the UV/GAC unit processes and IX #1, and therefore the quantity of water processed through UV/GAC will not equate to the quantity of water processed through IX.

b/ This ground water is collected each operating day (i.e., 5 days per week).

c/ Other sources may include purge water, ER Accelerated Action Project water, 903 Pad Decon, or other water collected.

d/ No UV/H₂O₂ effluent was treated through the GAC.

*/ Water retreated and is not included in Year-to-Date Totals.

**/ Please note that 21,061 gallons were retreated in October and 17,050 gallons were retreated in November. Water retreated is not included in Year-to-Date Totals.

***/ Please note that 19,742 gallons were retreated in October and 19,258 gallons were retreated in November. Water retreated is not included in Year-to-Date Totals.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

2.2 CHEMICAL USAGE

The following chemicals are utilized during wastewater treatment operations at the CWTF:

- Building 891
 - Hydrogen peroxide (UV oxidation)
 - Hydrochloric acid (ion exchange regeneration and pH adjustment)
 - Sodium hydroxide (ion exchange regeneration)
- T-900A/T-900B trailers
 - Sulfuric acid (pH adjustment: TK-1 and effluent)
 - Calcium hydroxide (precipitation)
 - Ferric sulfate (precipitation)
 - Hydrogen peroxide (chemical cleaning of filter modules)
 - Sodium hydroxide (pH adjustment: TK-2)

Table 2-2 summarizes the quantities of chemicals utilized during the period of October through December 1998.

2.3 WASTE GENERATION

The following types of waste are generated during normal wastewater treatment operations at Building 891 and the T-900A/T-900B trailers:

- Building 891
 - Used filter socks
 - Neutralized ion exchange regenerant
 - Personnel protective equipment
 - Clay filter media
- T-900A/T-900B trailers
 - Filter press sludge cake
 - Personnel protective equipment
 - Used filter membranes

Table 2-3 summarizes the types and quantities of the waste generated during wastewater treatment operations at the CWTF for the fourth quarter of 1998. From October 1, 1998 through December 31, 1998, 9,321 gallons of neutralized regenerant water from Tank 210 were sent to the Building 374 evaporator for processing.

TABLE 2-2
CONSOLIDATED WATER TREATMENT FACILITY
CHEMICAL USAGE

Month/Year	Building 891			T-900A/T-900B					
	Hydrochloric Acid 36% (gallons)	Sodium Hydroxide 50% (gallons)	Hydrogen Peroxide 50% (gallons)	Sulfuric Acid a/ 98% (gallons)	Calcium Hydroxide (pounds)	Ferric Sulfate (pounds)	Hydrogen Peroxide 35% (gallons)	Sodium Hydroxide 50% (gallons)	Sodium Hypochlorite (gallons)
Jan-98	74.8	74.8	0.4	3.9	78.0	15.9	8.6	4.1	0.0
Feb-98	199.0	102.0	1.4	3.8	90.0	11.5	7.9	4.6	0.0
Mar-98	0.0	0.0	0.0	8.5	161.0	21.0	15.6	8.8	0.0
1st Quarter Totals	273.8	176.8	1.8	16.1	329.0	48.4	32.1	17.5	0.0
Apr-98	294.0	178.0	3.0	6.4	141.0	18.0	10.7	6.9	0.0
May-98	106.0	60.0	1.4	9.4	240.0	26.0	7.3	13.7	0.0
Jun-98	0.0	0.0	0.0	2.5	54.0	6.0	4.9	2.5	0.0
2nd Quarter Totals	400.0	238.0	4.4	18.4	435.0	50.0	22.9	23.1	0.0
Jul-98	0.0	60.0	0.0	1.8	48.0	6.0	4.8	1.7	0.0
Aug-98	181.0	61.0	0.0	4.7	180.0	17.5	14.9	3.2	0.0
Sep-98	0.0	119.0	5.3	1.4	30.0	4.0	0.4	1.7	0.0
3rd Quarter Totals	181.0	240.0	5.3	7.8	258.0	27.5	20.1	6.5	0.0
Oct-98	264.7	46.2	0.9	1.9	52.9	12.9	7.3	5.9	0.0
Nov-98	0.0	53.9	0.0	0.4	22.5	5.5	5.0	6.7	0.0
Dec-98	0.0	0.0	0.0	2.1	60.0	10.0	5.3	0.0	0.0
4th Quarter Totals	264.7	100.1	0.9	4.4	135.4	28.4	17.5	12.6	0.0
Year-to-Date Totals	1119.5	754.9	12.4	46.7	1157.4	154.3	92.5	59.8	0.0

a/ In addition to the sulfuric acid quantity listed in this column, occasionally a small amount (approximately 1 gallon per effluent tank) of sulfuric acid is used in Building 891 for effluent pH adjustment.

TABLE 2-3
CONSOLIDATED WATER TREATMENT FACILITY
WASTE GENERATION

Month/Year	Building 891			T-900A/T-900B				Bldg 891/T-900A/T-900B	
	Filter Socks (55-gal drum)	Neutralized Regenerant to 374 (gallons)	Spent Media (drums)	Sludge Production (55-gal drum)	Spent GAC (pounds)	Used Filter Membranes (55-gal drum)	Personal Protective Equip. (55-gal drum)		
Jan-98	--	4,565	0		2	0	--		
Feb-98	--	0	0		0	0	--		
Mar-98	--	0	1		2	0	--		
1st Quarter Totals	0 a/	4,565	1		4	0	0 b/c/		
Apr-98	--	0	0		0	0	--		
May-98	--	0	0		0	0	--		
Jun-98	--	0	0		0	0	--		
2nd Quarter Totals	0 a/	0	0		0	0	0 b/c/		
Jul-98	0	0	0		0	0	--		
Aug-98	0	2,632	0		0	0	--		
Sep-98	0	4,737	0		2	0	--		
3rd Quarter Totals	0 a/	7,369	0		2	0	0 b/c/		
Oct-98	0	4,681	0		0	0	--		
Nov-98	0	4,640	0		3	0	--		
Dec-98	0	0	0		0	0	--		
4th Quarter Totals	0 a/	9,321	0		3	0	0 b/c/		
Year-to-Date Totals	0	21,255	1		9	0	0		

a/ Used filter socks are drummed with other compatible wastes generated onsite, therefore the drums generated cannot be tracked.
b/ PPE is collected from water treatment operations, MDF decontamination operations, etc. and is drummed collectively.
c/ These drums are filled gradually, and therefore only quarterly totals are reported.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

3.0 INFLUENT AND EFFLUENT SAMPLING (July through September 1998)

3.1 OU1 FRENCH DRAIN SUMP, COLLECTION WELL AND BUILDING 881 FOOTING DRAIN CHARACTERISTICS

Collection Well water is now collected separately from the French Drain Sump water, and collection and treatment of water from the Building 881 Footing Drain was discontinued in December 1994. Therefore the current French Drain Sump data is representative of only those waters that seep from the groundwater table into the French Drain. Quarterly sampling was performed at the French Drain Sump and the Collection Well on August 20, 1998 and August 28, 1998, respectively. The Building 881 Footing Drain was sampled on August 19, 1998. The groundwater group is conducting the sampling. The results of the sampling are reported in the Quarterly Groundwater Report.

3.2 OU2 SURFACE WATER CHARACTERISTICS

Collection of water from SW-59 was stopped on June 25, 1998, due to the installation of the Mound plume treatment system. Effective May 6, 1994, the collection and treatment of SW-61 and SW-132 was discontinued as per the authorization obtained on April 24, 1994 from the Environmental Protection Agency (EPA) and the Colorado Department of Public Health and the Environment (CDPHE). Surface water is sampled on a quarterly basis from SW-59, SW-61 and SW-132. The surface water group began collecting samples from SW-61 and SW-132 on August 4, 1998. The results of sampling from these locations are reported in the Quarterly Environmental Monitoring Report.

3.3 TREATED EFFLUENT CHARACTERISTICS

Treated effluent from the CWTF is stored in one of three effluent storage tanks prior to discharge. An effluent storage tank is sampled and is discharged if the analytical results show that ARARs have not been exceeded. There was no treated water discharged during the fourth quarter of 1998 because there was not sufficient water stored in an effluent tank to warrant sampling.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

4.0 ENVIRONMENTAL COMPLIANCE

4.1 PERIODS OF NON-COLLECTION

All collections were performed for the fourth quarter of 1998.

4.2 AIR MONITORING

Air monitoring was performed with no readings found above background during process runs and transfers of incidental waters.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

5.0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Collection and treatment of water from the French Drain Sump will continue as normal. Water from the Collection Well will continue to be collected using the portable trailer and transported to the CWTF for off-loading and treatment. Purge, incidental and decontamination pad waters will continue to be accepted and treated.

The CWTF will continue to accept and treat waters from Environmental Restoration Projects. Projects being supported with water treatment activities include the Trench 1 Project and may potentially include Solar Ponds equipment decontamination water. The CWTF will need to package filter cake from the sludge press system.

Sampling of OU1 and OU2 locations will continue to be performed by groundwater and surface water groups.

SECTION B - OU7 PASSIVE SEEP INTERCEPTION AND TREATMENT SYSTEM (PSITS)

6.0 INTRODUCTION, OPERATIONS, AND SAMPLING

The OU7 Passive Seep Interception and Treatment System (PSITS) is designed to collect and treat OU7 seep water and thereby eliminate, to the extent practicable, the discharge of the FO39-listed waste contained in this seep water to the East Landfill Pond. The OU7 Treatment system was modified in the fourth quarter of 1998 to allow passive aeration of OU7 waters. The waters exit the landfill and flow through existing piping without GAC treatment. The water is piped to land surface and flows over stepped flagstones and a gravel bed. The collection and treatment system is comprised of the following items:

- A seep interception system.
- A settling basin to remove total suspended solids.
- Stepped flagstones and a gravel bed to encourage volatilization of contaminants.

The water before and after aeration will be sampled monthly for volatiles and semivolatiles. The aeration effluent will also be sampled monthly for metals, isotopic plutonium, uranium and americium, gross alpha and beta, and tritium.

The bag filtration system and the GAC vessels went offline on October 23, 1998 as a result of modifications to the OU7 collection and treatment system. Filter socks and GAC media were packaged according to the Waste Generating Instructions.

The flow meter was returned to service October 26, 1998 after sediments clogging the flow meter were removed. Alternative flow meter configurations are being examined due to the flow meter exhibiting decreased reliability.

There were no periods of system bypass during the fourth quarter of 1998. The EPA and CDPHE will be notified immediately in any instance where bypass continues longer than 72 hours. Periods of bypass less than 72 hours will be documented in this report.

On September 14, 1998, samples were collected at the landfill outfall (SW00196). No constituents were detected which exceeded the Treatment System Performance Objectives for the third quarter of 1998.